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Successful treatment with upadacitinib in concurrent atopic dermatitis, Crohn's disease, alopecia areata, and eosinophilic gastropathy in a pediatric patient

Use of upadacitinib in pediatric comorbidities

Edoardo Mortato,[1,2] Ludovico Maria Rao,[1] Marina Aloi,[3] Arnaldo Cioni,[1] Enrico Matteini,[1] Angela Fico,[1] Sara Lambiase,[1] Ruslana Gaeta Shumak,[1] Luca Bianchi,[1] Elena Campione,[1] Laura Diluvio[1]

[1]Dermatology Unit, Department of Systems Medicine, University of Rome "Tor Vergata", Rome; [2]Section of Dermatology and Venereology, Department of Precision and Regenerative Medicine and Ionian Area, University of Bari "Aldo Moro", Bari; [3]Pediatric Gastroenterology and Liver Unit, Sapienza University of Rome, Policlinico Umberto I, Rome, Italy

Correspondence: Laura Diluvio, Dermatology Unit, Department of Systems Medicine, University of Rome "Tor Vergata", Viale Oxford, 81, 00133 Rome, Italy.
Tel.: +39.06.20900252
Fax: +39.06.20902742
E-mail: lauradiluvio@yahoo.it

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Consent for publication: the patient's relatives provided written informed consent for the use of the patient's personal data and any accompanying images for the publication of this case report.

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Abstract

We present a case of a 15-year-old male diagnosed with multiple autoimmune conditions, including atopic dermatitis (AD), Crohn's disease (CD), alopecia areata (AA), and eosinophilic gastroenteropathy. After failure of previous therapies, the patient was successfully treated with upadacitinib, a Janus Kinase 1 (JAK-1) inhibitor. Significant improvement in skin and gastrointestinal symptoms, as well as hair regrowth, was observed following 16 weeks of treatment. This case highlights the therapeutic potential of JAK inhibitors like upadacitinib in managing complex autoimmune disorders that share common pathogenic pathways.

Introduction

Upadacitinib is an oral, small-molecule drug that selectively inhibits Janus Kinase 1 (JAK-1), recently approved for treating moderate-to-severe atopic dermatitis (AD) in patients aged 12 years and older and for moderate-to-severe active Crohn's disease (CD) in adults.[1,2] Although clinical trials have not specifically investigated its use in treating alopecia areata (AA), upadacitinib has shown promising results in cases involving multiple autoimmune diseases, including CD and AD,[3] likely due to its role in blocking the JAK-signal transducer and activator of transcription (STAT) pathway implicated in these conditions.[4,5] Here, we describe a case in which upadacitinib successfully managed AD, CD, AA, and eosinophilic gastroenteropathy in a pediatric patient.

Case Report

A 15-year-old male presented with a history of severe AD since childhood, accompanied by peripheral hypereosinophilia. In August 2020, the patient was diagnosed with CD and initially treated with adalimumab. Despite this treatment, gastrointestinal symptoms persisted, and in April 2021, endoscopic examination revealed inflammation in the descending colon, sigmoid colon, and distal ileum, as well as duodenal mucosal lesions. Histopathology confirmed eosinophilic gastroenteropathy.

The patient was subsequently started on azathioprine, but treatment was discontinued in November 2022 due to scalp hair loss, which progressed to complete alopecia areata involving the entire body. In March 2023, a severe relapse of AD occurred, with eczematous lesions affecting the face, trunk, antecubital, and popliteal areas. Treatment with dupilumab was initiated, but it was discontinued in December 2023 due to worsening gastrointestinal symptoms.

In January 2024, the patient was reassessed for severe AD, with an Eczema Area Severity Index (EASI) score of 26 and a Pruritus Numeric Rating Scale (P-NRS) score of 10/10. AA was also severe, with a Severity of Alopecia Tool (SALT) score of 100 (Figure 1 a-d). Endoscopy revealed hyperemic

mucosa and aphthous ulcers in the colon and ileum, with small bowel ulcers upstream of the ileocecal valve (Figure 2 a,b).

After evaluation by the multidisciplinary team in March 2024, treatment with upadacitinib 15 mg once daily was started. After 16 weeks of treatment, a dermatologic assessment revealed complete resolution of AD (EASI score 0), significant reduction in itching (P-NRS score 2/10), and hair regrowth on the scalp, eyebrows, and eyelashes (SALT score 20) (Figure 1 e-h). Endoscopic capsule examination showed marked improvement in bowel condition, with only small residual lesions (Figure 2 c,d). Reduction in stool frequency, fecal urgency, and abdominal pain was also reported.

Discussion

This case underscores the therapeutic potential of JAK inhibitors like upadacitinib in treating multiple autoimmune conditions, particularly those that share a common pathogenic mechanism, such as AD, AA, and CD. The JAK-STAT pathway plays a central role in the immune dysregulation observed in these diseases, and inhibiting this pathway may offer a targeted therapeutic approach.[4,5] The success of upadacitinib in this case suggests that it could be a viable option for managing patients with concomitant autoimmune disorders, thereby minimizing the need for multiple medications and reducing the likelihood of adverse side effects.

The association between AA and inflammatory bowel disease (IBD), such as CD, is well-established, with a higher prevalence of AA in IBD patients than in the general population.[6] Despite this, treatment options for these overlapping conditions remain limited. Upadacitinib's dual ability to alleviate both skin and gastrointestinal symptoms, along with hair regrowth, highlights its potential as a versatile and effective treatment, especially in complex cases involving pediatric patients with overlapping autoimmune disorders.

Conclusions

This case supports the safety and efficacy of upadacitinib in treating pediatric patients with AD, CD, AA, and gastrointestinal eosinophilic diseases, as also reported in a recent paper.[7] Further research is warranted to explore its broader application in similar cases and to evaluate its long-term effects.

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Figure 1. Clinical pictures of universal alopecia areata at baseline (**a-d**) and after 16 weeks of upadacitinib treatment (**e-h**).

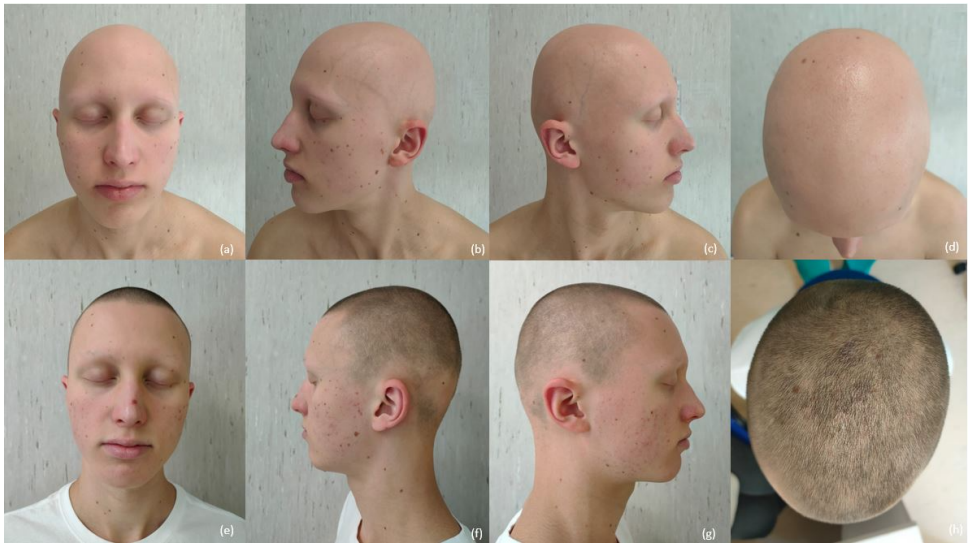

Figure 2. Endoscopic capsule exam showed hyperemic mucosa, aphthoid and oval ulcers of the small intestine and colon at baseline (**a, b**). After 16 weeks of treatment, capsule endoscopy revealed normal mucosa with a preserved vascular pattern (**c, d**).